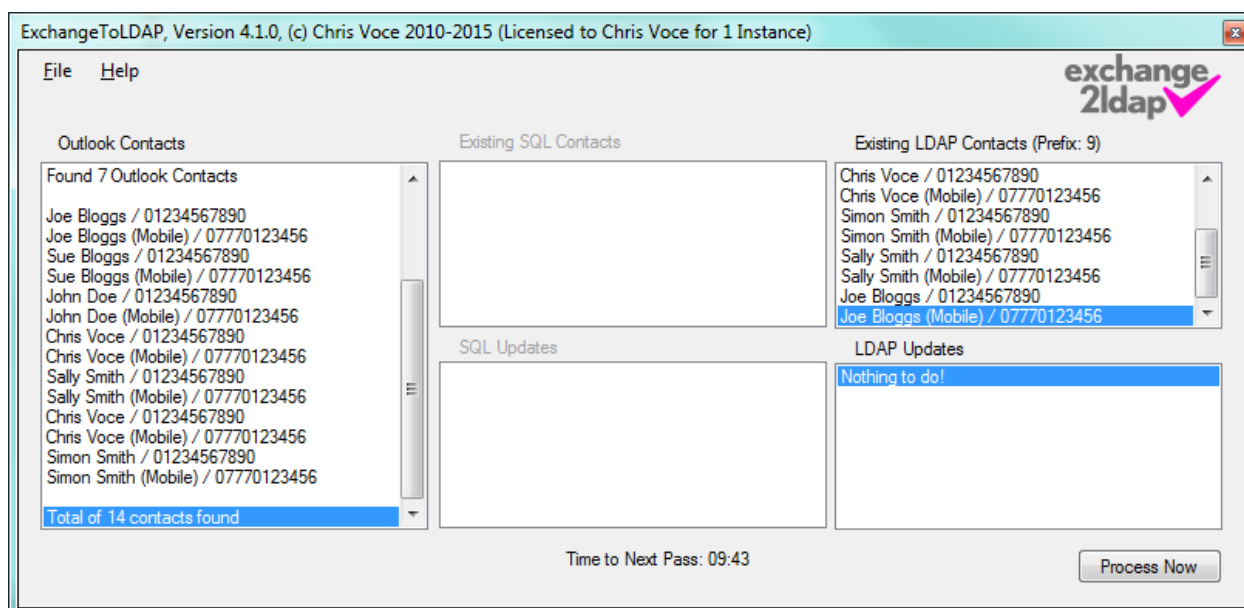# exchange 2ldap ✓ v4.1.0

Overview

Exchange2LDAP will keep an LDAP Server and/or a SQL table updated with the contents of one or several Exchange Contacts folders. These can be either personal folders, or central, public folders. It can also write these to a CSV file.

The intended purpose of this application is to keep the internal "Directory" of an Avaya IP Office Telephone System up to date automatically. The software that comes with IP Office ("Manager") allows too much access to too many settings and is not user friendly to update the Directory. It does allow you to import contacts via a CSV file, but the task cannot be automated. IP Office can be pointed to an LDAP Server though, and told to update from it every x minutes.

There are, I am sure, many other telephone systems that can sync with an LDAP Server, and other uses that I have not thought of. This application is by no means tied to the Avaya IP Office system in any way, though that is the only system that I have experience of.
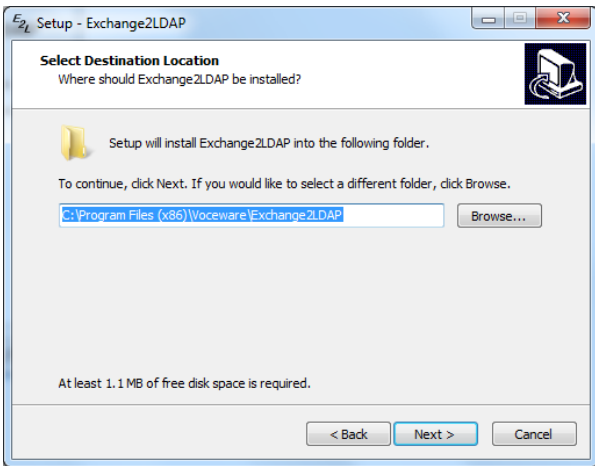
Installation

Microsoft .Net Version 2.0 is required. You can obtain this from the Microsoft Website, or visit the Downloads page at voceware.co.uk for a link.
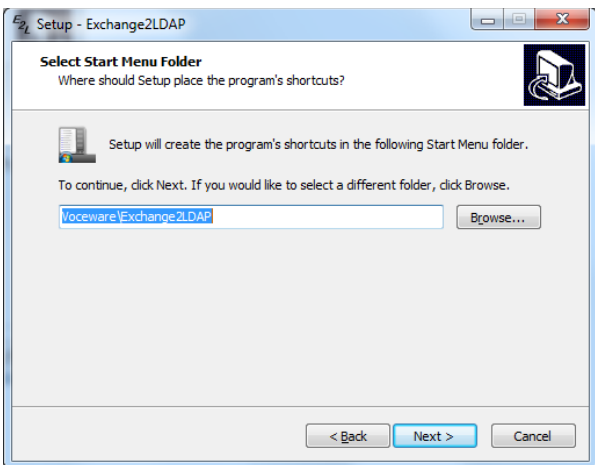
Then simply run the installation utility. Accepting the defaults should work in most cases. If Microsoft .Net Version 2.0 is not installed, the installation utility will tell you so, then exit.
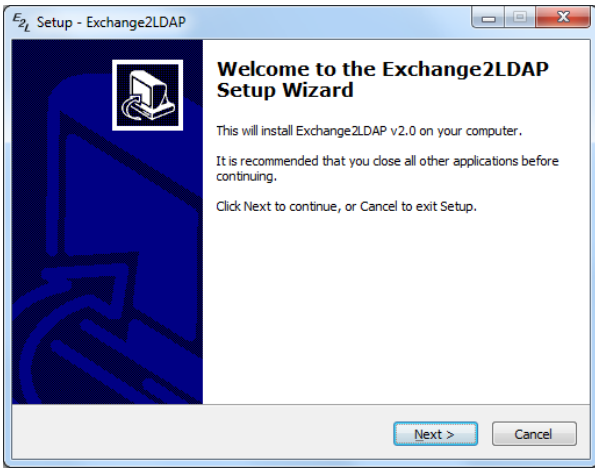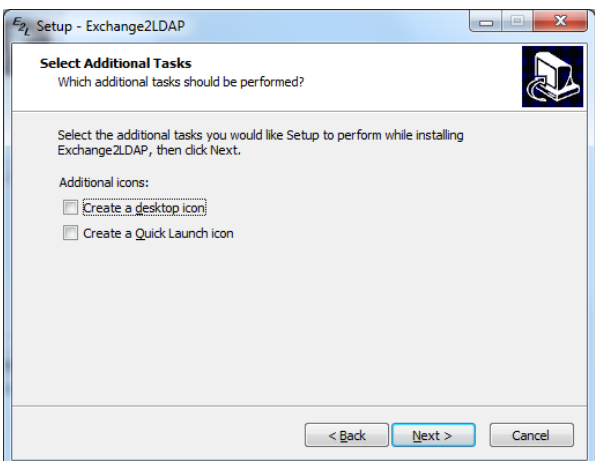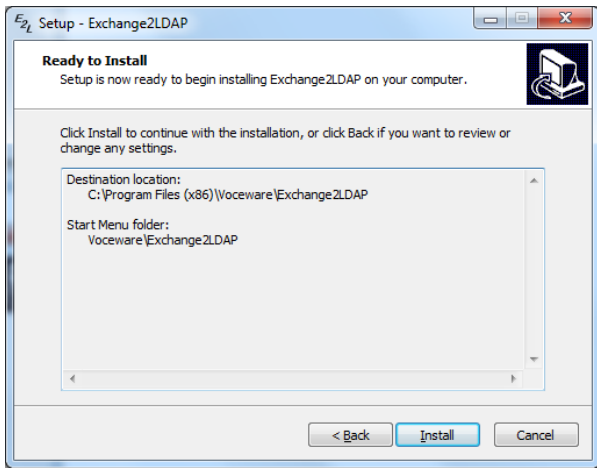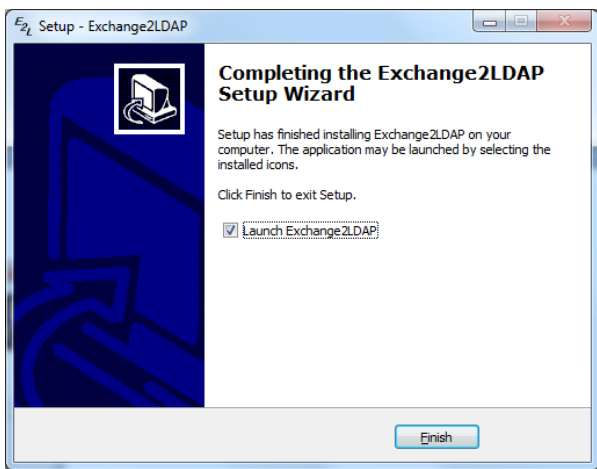
Press Next…

Choose an installation folder…

Choose which group it will appear under in the Start menu

Create shortcuts if desired…

Press Install to install with the chosen options

Start the application if you wish, when you click Finish to exit the installation utility.

An LDAP Server is also required. There are numerous available to download from the Internet for free, but see Appendix A for an example Server along with configuration instructions.

Finally, a version of Outlook needs to be installed on the machine, with its "default" profile set up to talk to Exchange with permissions to see the Folders that you wish to Synchronise. Depending on the system settings, you may also have to change the trust settings within Outlook to allow Exchange2LDAP to access the contacts. In Outlook, go to Tools / Trust Center, then set it not to warn about suspicious activity:
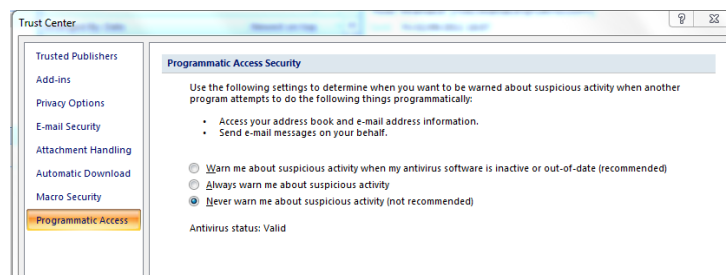
For information on setting up the Avaya IP Office Telephone System to sync its internal Directory from your LDAP Server, see Appendix B.

Licensing

Without a License, the application will be fully functional but with the limitation that it will only process the first 20 contacts found in Exchange. It will also not delete existing contacts from the LDAP Server that are no longer in Exchange.

To license the application, you need to supply us with your name, and the name of the machine that the software will be installed on. The license will be tied to that machine name, and is non-transferrable. We will send you a file called Exchange2LDAP.LIC, which will need to be copied to the same folder as the application (by default C:\Program Files\Voceware\Exchange2LDAP). The application will then be fully functional.

The simplest way to install the Exchange2LDAP.LIC file is to save it from the email we send you to a known place (such as C:\ or the desktop), then use the "Browse to License File" option on the File Menu to select this file. This will copy the file to the program installation folder for you.

Configuration

Menus

File / Updates: Manage the auto-update feature:

> **Check Now**: Checks www.voceware.co.uk immediately and informs you if there is a newer version, asking you if you wish to download and install it

> **Manual / Alert / Ask / Auto**: Set the mode of the automatic checking. Exchange2LDAP will check www.voceware.co.uk once every 24 hours for a new version, unless set to manual. **Alert** will simply inform you and you will then have to "check now" to download it. **Ask** is similar but will ask if you wish to download it. **Auto** will download and apply the update automatically, restarting the application.

File / Import License: Allows you to browse to an Exchange2LDAP.LIC file anywhere and automatically copy it to the program folder.

File / Edit Config: Opens the Exchange2LDAP.ini file in Notepad.

File / Exit: Allows you to exit the application.

Help / About: Gives you details of the applications author and contact details

Help / View Manual: Views the version of this manual shipped with the clock

Help / View Revision List: Views the changes and revisions to each version of the clock

<u>Config File</u>

The application is configured by a simple text ini file, Exchange2LDAP.INI. You can edit it directly, or use the "Edit Config" option from the File Menu to launch it in Notepad. There are only a few settings, detailed below:

```
[Main]
OnePassOnly=False
Interval=600
PreExecuteExe=
PreExecuteParams=
PreExecuteSuccessCode=0
SourceMethod=MAPI
SourceCSVFile=c:\export.csv
ExchangeFolder=Public Folders\All Public Folders\Office Contacts
CountryCode=
ReplaceCountryCode=
ReplacePlus=
CSVFile=
LDAPServerIP=127.0.0.1
LDAPUser=cn=Manager, dc=maxcrc,dc=COM
LDAPPassword=password
LDAPObjectClass=person
LDAPUserFields=cn,sn
LDAPPhoneFields=telephoneNumber
LDAPNameMapping=CN
LDAPPhoneNumberMapping=TELEPHONENUMBER
LDAPSearchCriteria=o=CONTACTS
LDAPPrefix=
SQLConnectionString=
SQLPrefix=
```

OnePassOnly – If set to true, the application will close after the first pass of obtaining contacts and populating SQL / LDAP. Default is false.

Interval – Duration in seconds that the app waits between updates, assuming OnePassOnly is not set.

PreExecuteExe, if specified, launches the specified exe file each time a pass starts to run (ie before reading from the CSV file or MAPI). **PreExecuteParams** are passed to the application, and Exchange2LDAP then waits for the application to close. On closing, it checks the error code returned, and if it matches **PreExecuteSuccessCode** (usually 0) then Exchange2LDAP carries on processing the pass. If the error code does not match then Exchange2LDAP does not continue.

SourceMethod – The method to obtain the contacts. Default is MAPI (interrogate exchange via Outlook).   The other option is CSV.

SourceCSVFile – If using the CSV SourceMethod, this specifies the location of the CSV file to import. See Appendix C for a use case.

ExchangeFolder – The path to the Folder in Exchange that you wish to copy to the LDAP Server. Exchange2LDAP uses your "default" profile within Outlook to make this connection, so make sure you have rights to the Folder.

Example settings for ExchangeFolder are:

GAL	This reads the contact details from the "Global Addess Book". Note that only Business and Mobile numbers are supported
Office 2010: Public Folders - chris@voceware.co.uk\All Public Folders\Office Contacts **Office 2007**: Public Folders\All Public Folders\Office Contacts	This reads the contact details from a shared contacts "public" folder. Note that you will need to specify your account instead of chris@voceware.co.uk, which is displayed at the top of the left hand listbox if you are unsure of it. 2007 does not require this.
2010: chris@voceware.co.uk\Test Contacts **2007**: Personal Folders\Test Contacts	This reads a specific Contact Folder from your account
<blank>	This reads your "default" contact folder

All contacts folders (other than the "Global Address List") support the following phone numbers:

Business, Mobile, Home, Home2, Other, CompanyMain, Car, Business2, Assistant, Primary, Radio, Callback.

CountryCode – If numbers are stored as +447770510xxx, +35314327xxxx, etc in Outlook, this allows you to specify what the local country code is, and with **ReplaceCountryCode** allows you to convert it to a local number. For example if CountryCode is set to "+44", and ReplaceCountryCode is set to "0", the above mobile number becomes 07770510xxx. The default is to leave the number as-is, but IP Office will not be able to dial these numbers.

ReplacePlus – The above setting converts the local country code. ReplacePlus allows you to replace the remaining international numbers. So in the above example, if ReplacePlus was set to "00", the +35314327xxxx would become 0035314327xxxx. The default is to leave the number as-is, but IP Office will not be able to dial these numbers.

CSVFile – The app can optionally write a CSV file with the contents of the Exchange Folder in a format that IPOffice Manager can import. Leave the filename blank to disable this feature or specify a path\filename to enable.

LDAPServerIP – The IP of the machine hosting the LDAP Server. If blank this disables the LDAP functionality.

LDAPUser - User in a format that LDAP understands

LDAPPassword – Password for LDAP User

LDAPSearchCriteria – Location to store / search for LDAP Users

LDAPObjectClass – The type of object to create for each contact

LDAPUserFields – Comma Separated list of fields to populate with the username (some are required by the LDAP Schema – sn and cn in our case – but others can also be specified subject to the LDAP Schema for the ObjectClass you chose).

LDAPPhoneFields – Comma Separated list of fields to populate with the telephone number (only 1 in our case).

LDAPNameMapping – Which field to map as the Name from LDAP when comparing to Exchange

LDAPPhoneNumberMapping - Which fields to map as the Phone Number from LDAP when comparing to Exchange

LDAPPrefix – If the phone system requires a number to access outside lines, this allows you to add it to all contacts, without having the number in Outlook. Default is blank, but a common setting may be 9 or 0 for an outside line.

SQLConnectionString – Defaults to blank, which disables the SQL functionality. An example connection string would be

"Data Source=127.0.0.1\SQLEXPRESS;Initial Catalog=MYDB;Integrated Security=False; User ID=sa; Password=password; MultipleActiveResultSets=True"

SQLPrefix – The same as LDAPPrefix, but for the SQL table. Usually this would be left blank.

```
 [Translation]
Business=
Mobile=(Mobile)
Home=(Home)
Home2=(Home2)
Other=(Other)
CompanyMain=(CompanyMain)
Car=(Car)
Business2=(Business2)
Assistant=(Assistant)
Primary=(Primary)
Radio=(Radio)
Callback=(Callback)
CharsToReplace=ä=ae,ö=oe,ü=ue,ß=ss,á=a,é=e,ó=o,'=
CharsToStrip=() .
```

These options (under the **[Translation]** section) allow you to specify the string added to the end of the name for each type of telephone number. The defaults are above (note that by default, the "Business" Telephone Number doesn't add anything after the contacts name, but this can be changed. Similarly, another type of telephone number can become the default by leaving the translation blank).

CharsToReplace allows you to supply a comma-separated list of characters (or strings to replace). Each entry should be <oldchar>=<newchar>. Useful to remove foreign characters that the LDAP Server or the eventual user of the LDAP data doesn't support. The above example removes German characters, and replaces the single quote mark with <nothing>.

CharsToStrip are characters that are stripped from phone numbers when read from Exchange/Outlook. Brackets, spaces and fullstops are the defaults.

Use

Run the application (copy its shortcut to the "startup" group if you want it to start automatically, or choose this option when installing). The application runs as a tray icon and can be hidden from view by either clicking the X in the corner of the app, or right-clicking the tray icon. If you want the application to start up hidden, simply make the shortcut "Minimized". Exiting the application can be achieved by right-clicking the tray icon, or holding CTRL whilst clicking the X.

The application reads in all contacts from the specified Exchange Folder or CSV file. For each contact, it creates a separate LDAP (and/or SQL) entry for each telephone number, appending the type of the telephone number to the end of the name in brackets (using the translation as specified in the INI file).

For example, if Exchange has a contact called "Jon Smith", with a Mobile and a Business telephone number, then two entries will be created in LDAP/SQL ("Jon Smith (Mobile)" and "Jon Smith"). The second one does not contain the word "Business" in LDAP as this is the default type of number. This can be changed in the translation section of the INI file.

There are three sets of lists on the main page:

- The left list is populated when the application reads contacts in from Exchange / CSV.
- The upper middle list is populated when reading the existing contacts in from SQL.
- The lower middle list shows the changes that are made to SQL (additions and deletions).
- The right-hand lists do the same as the SQL lists, but for the LDAP Server.

The application finishes the updates, then waits the "Interval" before repeating (clearing the three lists first), unless OnePassOnly is set to true, in which case the application will exit.

Appendix A – An example LDAP Configuration

A free LDAP Server (for Linux) can be downloaded from http://www.openldap.org. A Windows version of this is available at http://www.userbooster.de/en/download/openldap-for-windows.aspx (or on the Downloads page of the Voceware Website).

I set it up as follows:

- Run the MSI to install OpenLDAP for Windows, accepting the default values, but setting a password for the root user when prompted (I used "password" !):
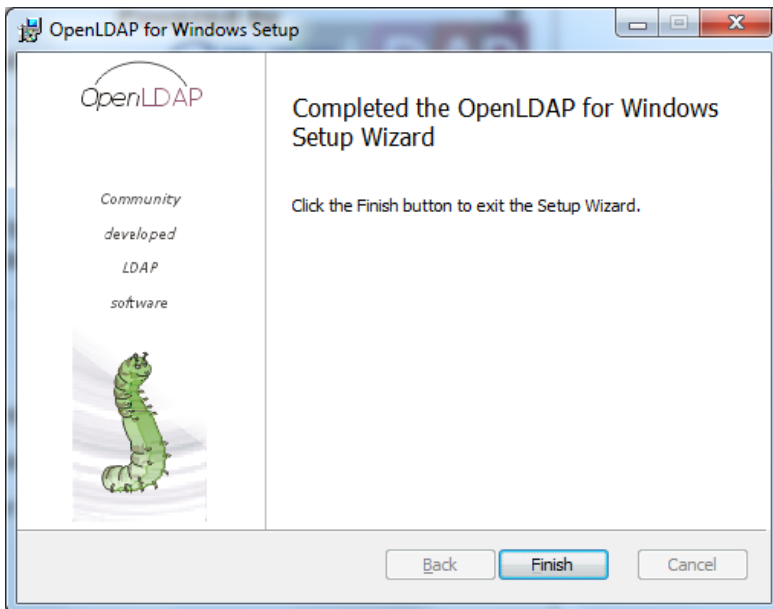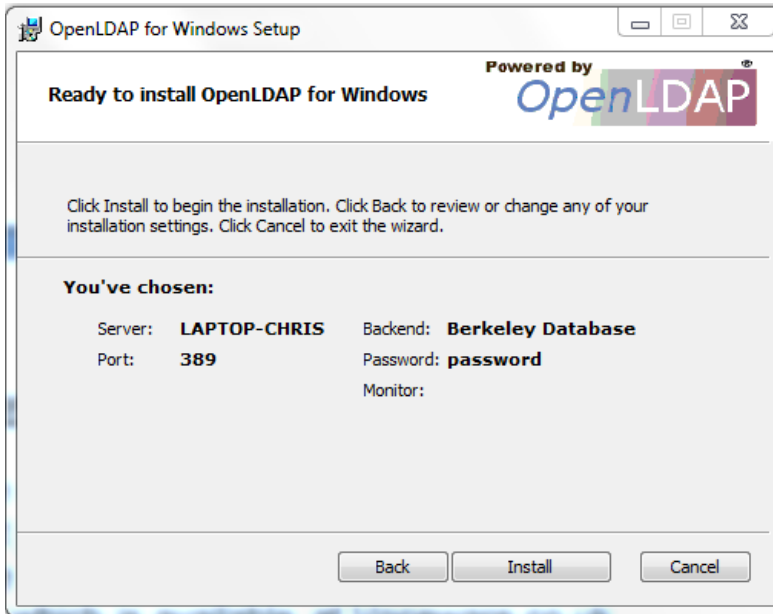
- This installs (and starts) an OpenLDAP Service:
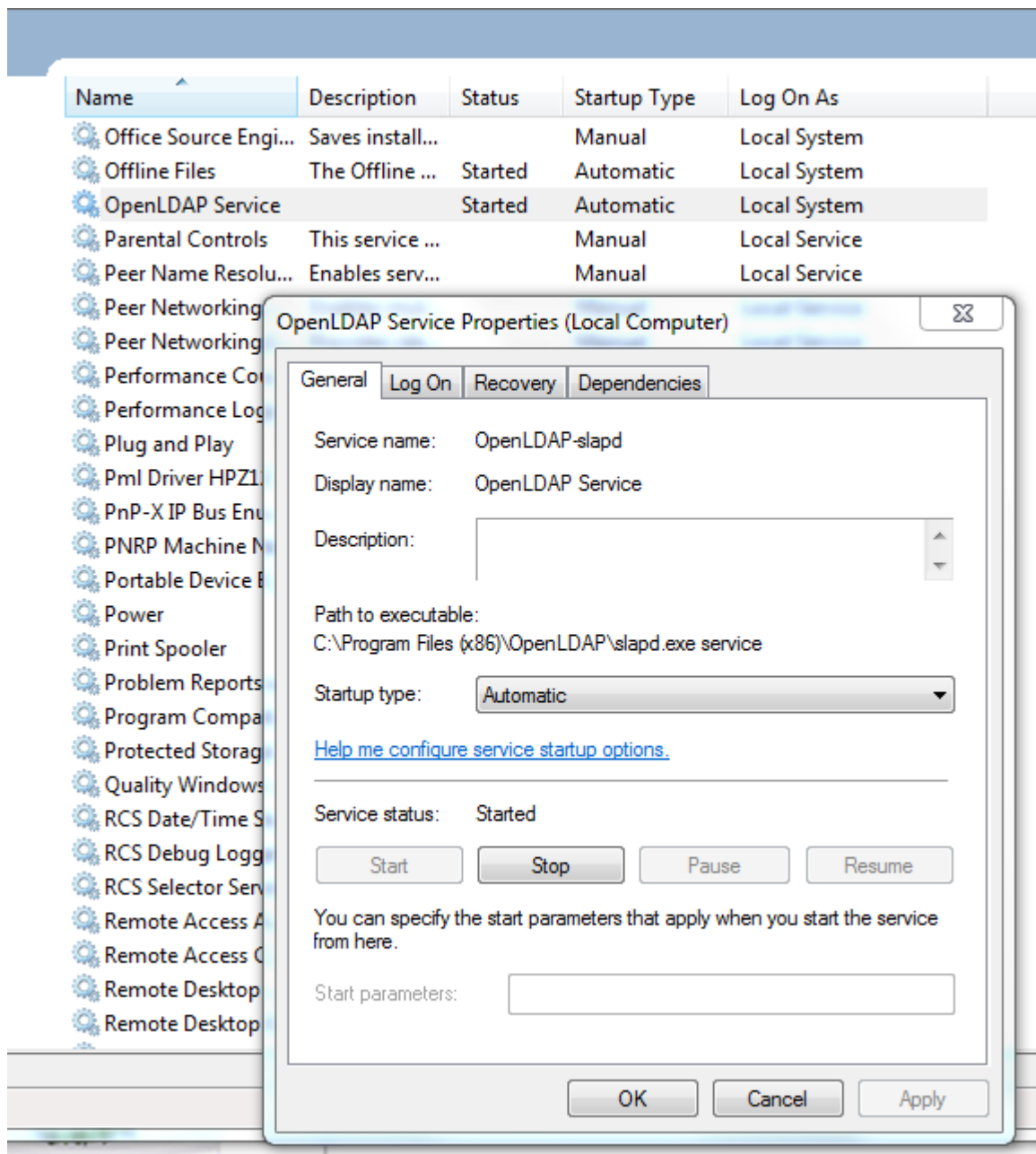
- In the installation folder (C:\Program Files\OpenLDAP) there is a configuration file, slapd.conf. In here is the rootdn ("cn=Manager,dc=maxcrc,dc=com") and the rootpw ("password"). I made 2 changes to this file:
  - Changed the "suffix" to blank ("")
  - Added an entry "allow bind_v2" just after all the includes, towards the top of the file. This is to support the older LDAP Protocol Version 2, which Avaya IP Office requires.
- Then restart the Service.

By default, Open-LDAP has a limit of providing only 500 entries to an LDAP client. This can be increased if required by adding "sizelimit 5000" (for example) to the slapd.conf file.

There is a very useful, free tool to explore and edit an LDAP Server. It is available at http://sourceforge.net/projects/ldaptool/files/ or again there is a copy at voceware.co.uk

Install this, again accepting defaults, then connect to your LDAP Server as follows:

- Launch LDAPExplorer2 from your Start Menu
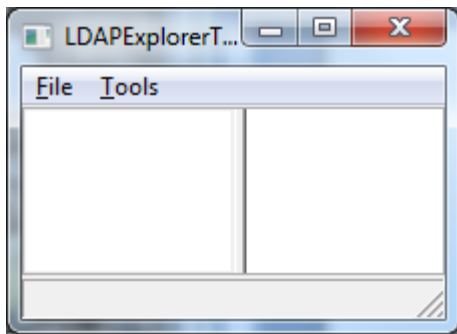
- Choose File / Configurations, choose NEW.
- Give it a name on the Configuration Tab (I used "test")
- Tell it your server IP on the Server Tab (I used 127.0.0.1 to connect to the local machine)
- Set the user DN to "cn=Manager, dc=maxcrc,dc=com" (note the space after the first comma! I have no idea why this is necessary!). These details are from the Readme PDF installed as part of the OpenLDAP Server under C:\Program Files\OpenLDAP\ReadMe, or from the slapd.conf config file.
- Set the password ("password" in my case), checking the "store password" button.
- Press OK, select your new "test" connection, and choose "Open":
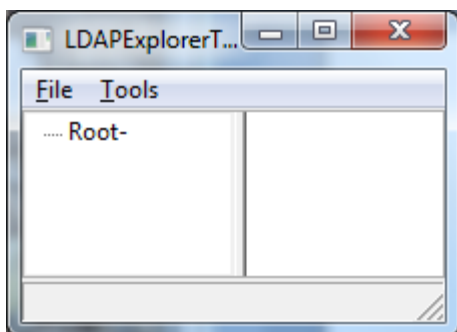
- You can click on Root to open a tree of information.

Next we must create a new container, for our contacts to live in (we don't want the Phone System to pull details such as our "Manager" user for instance, so we want a separate container).

- Right-click "Root", and choose "Add"
- For the Entry RDN enter "o=CONTACTS"
- For the Object Class (from schema) choose "Organisation"
- In the "MUST attributes" window, double-click each entry – they will appear in the window above.
- Right click the newly appeared "o", and choose "Add value". Enter "CONTACTS".
- Click Save. O=CONTACTS should now have appeared under Root in the left hand pane.

Running Exchange2LDAP the first time should then populate the CONTACTS container with all of your Exchange Contacts, each entry appearing as "cn=Their Name".

Appendix B – Configuring Avaya IP Office to sync with the LDAP Server

IP Office will populate its internal Directory from an LDAP Server. It supports up to a maximum of 500 contacts. To configure it to work with the LDAP Server above, the following should work. Of course there are many other options such as authentication, etc.

- Open IP Office's Manager application and login as Administrator
- Select System on the left hand tab
- Select LDAP on the right hand tab and set as follows:

System	LAN1	DNS	Voicemail	Telephony	LDAP	System Events	SMTP	CDR/SMDR	Twinning	VCM	SBCC

☑ LDAP Enabled

User Name	
Password	
Confirm Password	
Server IP Address	192 . 168 . 1 . 1
Server Port	389
Authentication Method	Simple ▼
Resync Interval (secs)	300
Search Base	o=CONTACTS
Search Filter	(telephoneNumber=*)
Number Attributes	telephoneNumber,otherTelephone,homePhone=H,otherHomePhone=H,mobile=M,ot

(in reality you are setting only the IP address and Search Base. The rest are the defaults).

300 secs is 5 minutes, which works well in my experience.

- Save the Config and exit the IP Office Manager software. This will require a restart of the switch.

Note that by default, IP Office allows only 500 Contacts to be read from an LDAP Server. This is configurable though if you need more, in IP Office version 4.1+:

From F1 help in IP Office Manager, add the following "Source Numbers" to the "NoUser" user:

- **ExtendLDAPDirectLimit** *<optional limit>* *(Software level = 4.1+)*
  This command allows the number of LDAP directory entries that the IP Office will read to be controlled. By default the IP Office will only support up to 500 LDAP directory entries. If this command is used without specifying an optional limit, the limit set is determined by the type of IP Office control unit; refer to the table below. Note that specifying or allowing a large directory limit may affect the performance of applications that use and display the directory, for example IP Office Phone Manager.

Control Unit	IP Office Directory Entries	LDAP Entries
Small Office Edition	100	1000
IP406 V2	2500	10000
IP412	10000	10000
IP500	10000	10000

Appendix C – Reading contacts from a CSV File

Reading the Global Address List via MAPI is a little restrictive – it is quite slow, and can support only Business and Mobile Phone numbers.

One solution to this is to use Microsoft's CSVDE utility to export directly from the Active Directory to a CSV file.

The required field is **displayName**, without which Exchange2LDAP will reject the CSV file entirely.   Other supported fields are **telephoneNumber**, **homephone** and **mobile**.

For example, run the following command line:

> CSVDE –f c:\export.csv –r objectCategory=person
> –l "displayName, telephoneNumber, homephone, mobile"

You could then set up Exchange2LDAP to import this CSV file.

You could combine the two into a batch file, launched as a Scheduled Task, and set Exchange2LDAP up to use the **OnePassOnly** option.

Or, you could set the following:

```
PreExecuteExe=CSVDE
PreExecuteParams=–f c:\export.csv –r objectCategory=person –l "displayName,  telephoneNumber, homephone, mobile"
PreExecuteSuccessCode=0
```

Then Exchange2LDAP will launch CSVDE and wait for it to complete before processing the CSV file each time the Interval passes.